Call for White Papers: Soliciting Community Input for WFIRST-AFTA Coronagraphic Science Investigations Related to NASA's Cosmic Origins and Physics of the Cosmos Themes

General Information

To: Cosmic Origins and Physics of the Cosmos Science Communities
Release Date: September 23, 2013
Response Date: ~~November 1, 2013~~ November 15, 2013

This is an open solicitation from the WFIRST-AFTA Science Definition Team.

Introduction

The Wide-Field Infrared Survey Telescope (WFIRST) is the highest priority large space mission recommended by the recent decadal survey in astronomy and astrophysics. It is designed to perform wide-field imaging and slitless spectroscopic surveys of the visible to near-infrared sky. The Astrophysics Focused Telescope Assets (AFTA) study design of the mission makes use of an existing 2.4m telescope to enhance light collecting and imaging performance. The main instrument is a wide-field multi-filter imager with infrared grism spectroscopy. It also features a small-field low-resolution integral field spectrograph. A coronagraph instrument was also part of the study and has a primary science focus of direct imaging of gas-giant exoplanets and debris disks. These instruments will also be available for use by Guest Observers. The WFIRST-AFTA Science Definition Team (SDT) and WFIRST Project have issued a detailed report describing the science program, design reference mission, and notional instrument capabilities for the mission (Spergel et al. 2013), which can be found at:

http://wfirst.gsfc.nasa.gov/science/sdt_public/WFIRST-AFTA_SDT_Final_Report_Rev1_130523.pdf

Useful Links

NASA Cosmic Origins Program Office:
http://cor.gsfc.nasa.gov/

NASA Physics of the Cosmos Program Office:
http://pcos.gsfc.nasa.gov/

WFIRST-AFTA homepage:
http://wfirst.gsfc.nasa.gov/

The Call

The SDT is soliciting community input for potential WFIRST-AFTA coronagraphic science investigations related to NASA's Cosmic Origins (COR) theme or Physics of the Cosmos (PCOS) theme. Such science investigations may further enhance the science case for the AFTA-study design that includes the coronagraph. While not a primary

driver for coronagraph design, science investigations other than exoplanet and debris disk studies may also provide helpful insight for future design choices. Basic designs under consideration call for a coronagraph that is expected to work at visible and near-infrared wavelengths with an inner working angle of ~3λ/D, an outer working angle of ~20λ/D, and an integral field spectrograph having a spectral resolution $R = \lambda/\Delta\lambda \sim 70$. The full wavelength range, filter choices, and spectral resolution of the instrument have not yet been fully defined, and there is some flexibility in these choices. With this Call, the community has an opportunity to suggest potential science uses of the coronagraph and to describe desirable instrument characteristics that would benefit specific COR or PCOS science programs. It is anticipated that the coronagraph will be used for such investigations as either the "primary" instrument during time dedicated to Guest Observers or as the "parallel" instrument during wide-field infrared imaging survey observations.

White papers describing possible COR or PCOS coronagraphic science goals, observing scenarios, or instrument requirements are to be delivered in electronic form as PDF files to Dr. Kenneth Sembach at the email address below. White papers should be no more than 3 pages in length, with a minimum 10-point font size. Respondents are advised that the white papers will be made publicly available online to assist in future WFIRST-AFTA planning efforts. It is anticipated that there will be an opportunity for respondents who wish to do so to present summaries of their white papers, either in person or by telecon, at a future joint Program Analysis Group meeting. The next such meeting is expected to occur at the January 5-9, 2014 meeting of the American Astronomical Society meeting in Washington, D.C. Notification of opportunities to present will be made after the white paper deadline of November 1, 2013. Questions related to this Call may be addressed to Dr. Sembach, the SDT Co-Chairs, or the NASA Headquarters Cosmic Origins Program Scientist.

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